

BINGNAN LI

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EDUCATION & EXPERIENCES

Amazon Web Services

Applied Scientist Intern

July. 2025 – Present

Seattle, US

- **Project:** Dynamic Multi-Expert Logit Ensemble for LLM Reasoning

University of California, San Diego

M.S in Computer Science and Engineering

Sep. 2024 – Present

San Diego, US

- **GPA:** 3.91/4.00

- **Selected Courses:** Algorithm Design and Analysis I(A), Probabilistic Reason&Learning(A), Recommender Sys&Web Mining(A)

ShanghaiTech University

B.E in Computer Science and Technology

Sep. 2020 – Jul. 2024

Shanghai, China

- **GPA:** 3.87/4.00

- **Ranking:** 3/248

- **Selected Courses:** Artificial Intelligence I(A+), Computer Vision II(A+), Introduction to Machine Learning(A), Deep Learning(A)

PUBLICATIONS (* INDICATES EQUAL CONTRIBUTION)

DLLG: Dynamic Logit-Level Gating of LLM Experts

Bingnan Li, Zhaoyang Zhang, Xiaoze Liu, Yantao Shen, ..., Zhuowen Tu, Stefano Soatto

Underreview

OverLayBench: A Benchmark for Layout-to-Image Generation with Dense Overlaps

Bingnan Li*, Chen-Yu Wang*, Haiyang Xu*, Xiang Zhang, Ethan Armand, ..., Jianwen Xie, Zhuowen Tu

NeurIPS 2025 D&B Track

YOLO-Count: Differentiable Object Counting for Text-to-Image Generation

Guanning Zeng, Xiang Zhang, Zirui Wang, Haiyang Xu, Zeyuan Chen, Bingnan Li, Zhuowen Tu

ICCV 2025

Generalize or Detect? Towards Robust Semantic Segmentation Under Multiple Distribution Shifts

Zhitong Gao, Bingnan Li, Mathieu Salzmann, Xuming He

NeurIPS 2024

Gradient-Map-Guided Adaptive Domain Generalization for Cross Modality MRI Segmentation

Bingnan Li, Zhitong Gao, Xuming He

Machine Learning for Health (ML4H 2023)

RESEARCH EXPERIENCES

Dynamic Multi-Expert Logit Ensemble for LLM Reasoning (ongoing)

Supervisor: Zhaoyang Zhang, Yantao Shen, Zhuowen Tu

July. 2025 – Present

Seattle, US

- **Developed a multi-agent ensemble system** integrating several domain-specialized LLM experts with efficient parallel inference and logit-level fusion.

- **Investigated oracle ensemble upper bounds** to quantify theoretical performance limits and identify the potential gains beyond single-expert capability.
- **Explored multiple dynamic ensemble strategies**, including logit-level weight prediction, trajectory-level quality estimation, and rollout-based correctness scoring.
- **Demonstrated that dynamic ensembles outperform uniform ensembles** and show clear potential to surpass the best individual expert across reasoning tasks.

Overlap-Aware Layout-to-Image Generation: A New Task and Benchmark

Supervisor: Zhuowen Tu

Jan. 2025 – May. 2025

San Diego, US

- Investigated failure modes of Layout-to-Image models under **dense overlapping bounding boxes**.
- Proposed **OverLayoutScore**, a spatial-semantic metric to quantify overlap difficulty and analyze model degradation.
- Built **OverLayoutBench**, a curated benchmark with **balanced difficulty**, dense captions, relationships, and human-verified annotations.
- Developed **CreatiLayout-AM**, an overlap-aware model incorporating **amodal mask supervision** to improve occlusion handling.
- The relevant paper has been accepted by **NeurIPS2025 (D&B Track)**.

OoD Detection under Multiple Distribution shifts

Supervisor: Xuming He, Mathieu Salzmann

Apr. 2024 – Aug. 2024

Shanghai, China

- Proposed a method to help Out-of-Domain(OoD) detection model distinguish between **domain-level** and **semantic-level** distribution shifts.
- Developed an automatic data augmentation method that **simultaneously generates images with novel classes and domain shift** via ControlNet and SAM.
- Proposed a **multi-margin contrastive loss** to control the uncertainty score with finer granularity.
- The relevant paper has been accepted by **NeurIPS 2024**.

Single Domain Generalization in Medical Image Segmentation

Supervisor: Xuming He

Aug. 2022 – Nov. 2023

Shanghai, China

- Developed a novel domain generalization framework that enables model to better generalize between various Magnetic resonance image modalities.
- Utilized **gradient-map** as a domain-invariant representation to eliminate the global image style discrepancy while preserving the structural information shared among different MRI modalities.
- Proposed a **pseudo-label based test-time-adaptation** method to gradually refine the segmentation results on areas that been affected by lesion tissues.
- The relevant paper has been accepted by **ML4H 2023**.

ACTIVITIES & HONORS & AWARDS

Outstanding Graduates of Shanghai (top 5%) 2024

Outstanding Student at ShanghaiTech University (top 3%) 2021, 2023

Merit Student at ShanghaiTech University (top 7%) 2022

TECHNICAL SKILLS

Languages: Python, C, C++, Matlab, RISC-V

Developer Tools: JetBrains Pycharm, VS Code

Technologies/Frameworks: Linux, GPU Cluster, GitHub, PyTorch, Numpy, OpenCV